MACKENZIE

MacFi-mp

MP3 DIGITAL AUDIO RECORD/PLAY SYSTEM

User's Manual

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Doc 99-20-043 - $25.00

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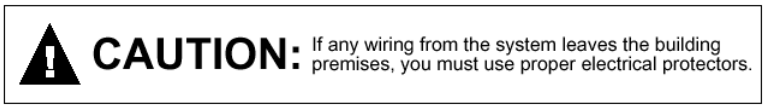
General Safety Instructions

Always follow these basic safety precautions when using the system:

1. Read carefully and understand all instructions.
2. Follow all warnings and instructions marked on the product.
3. DO NOT block or cover ventilation slots and openings.
4. DO NOT place the product in a closed enclosure or cabinet unless proper ventilation is provided.
5. Never spill liquid on the product or drop objects into the ventilation slots and openings. Doing so may result in serious damage to the components.
6. Repair or service must be performed by a factory authorized repair facility.
7. DO NOT staple or otherwise attach the power supply cord to building surface.
8. DO NOT use the product near or in wet or damp places, such as wet basements.
9. DO NOT install during lightning storm.
10. Never touch un-insulated wires or terminals unless the unit is disconnected from both power and the rest of the phone system.
11. Use Caution when installing or modifying configuration switches or control lines.
12. The unit must be securely attached to a wall board, rack or table mounted.



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Shipping Container Contents

The following items should be found in the container of MacFi-mp, MP3 Digital Audio Record/Play System:

- MacFi-mp System
- Installation and User Guide
- Set of four rubber feet

Hardware Configurations

- MacFi-mp 40; 99 messages, 40 minutes
- MacFi-mpe 40; 99 messages, 40 minutes, RS-232 control, Sync relay

Optional Accessories:

- Power Pack, 12 VDC, 1.0 amp, 115 V 50/60Hz, Order: MacFi-mp-PS
- Standard Rack Mount Kit, Order: MacFi-mp RM-KIT
- Enhanced Rack Mount Kit, Order: MacFi-mp RM-KIT-E
- RS-232 Cable for Enhanced Unit, Order: MacFi-mpe-CBL
- Weather Resistant Speaker with Mount, Order: CS4
- Microwave Motion Sensor, Order: MS-2
- Input Control Module, 25 start inputs to RS-232, Order: ICM-25

1. OVERVIEW

1.1 Features and Capabilities

The Mackenzie MacFi-mp family is the most cost effective series of MP3 Digital Audio Record / Play Systems available for industrial usage. Backed by Mackenzie's years of system design experience, MacFi-mp offers a great deal of functionality in a compact and inexpensive package.

Messages are user recordable via microphone or line input through a straight forward user interface located directly on the unit. Simple parallel controls for 8 messages are available on terminal connectors. Record and Stop inputs and a Play relay output are also accessible via terminals.

The MacFi-mp offers up to 99 messages and 40 minutes of MP3 audio. MP3 supports up to 15kHz bandwidth and 80 dB of dynamic range. All 99 messages are accessible from the user interface on the MacFi-mp with 8 remote start inputs accessible via the remote activation pluggable terminal. Dynamic Message Length (DML) technology has been incorporated in the MacFi-mp allowing each of the messages to be of different duration. DML also provides for replacement messages to be a different length than the original, maximizing memory efficiency and compatibility with future applications.

The MacFi-mp retrieves stored audio data from non-volatile flash memory, eliminating the need for battery backup, and delivers superb sound quality.

The MacFi-mp offers several different playback modes to accommodate different applications. Standard, Play once per closure, Play while active, and Retrigger allow the MacFi-mp to be used with existing on site control circuitry. Message repetition and delay between message settings are user selectable as well.

The space saving built-in 4 watt power amplifier is perfect for most direct to speaker applications as it eliminates the need for additional hardware.

The MacFi-mp's small size, industrial construction and the absence of moving parts make it ideal for automatic unattended operation, especially in harsh environmental or mobile conditions. An optional 1U rack mount adapter is also available.

1.1.1. MacFi-mpe - Enhanced Features

The MacFi-mpe version adds the following features to the standard unit:

-RS-232 (Serial) control of recording and playback
-RS-232 (Serial) download of MPEG layer 1, 2 or 3 (MP3) files.
-Synchronization Relay
-Front mounted controls

General Specifications

Audio Coding:

Recording:	MPEG 1, Layer 3(Variable Bit Rate)
Playback:	MPEG 1, Layer 3(VBR) or MPEG 1, Layer 1, 2 & 3 via audio file transfer capability of the MacFi-mpe

Audio Quality:

Dynamic Range:	80dB, Typical
Signal to Noise:	80dB, Typical
Frequency Resp.:	50Hz to 15kHz
THD:	< 0.5% at 1kHz, Typical

Audio Input:

Line:	10k ohm, RCA
Mic:	1.5k ohm, 1/8" mini jack, Low Z
Level:	+4dBm max., adjustable potentiometer

Audio Output:

Line:	600 ohm(+4dBm max.), transformer isolated, RCA
Amplified:	4 watts into 8 ohm, 2 pin pluggable terminal
Level:	Adjustable potentiometer

Audio Memory:

Type:	FLASH EPROM
Capacity:	32MB, 40 min local record

Power Requirement:

Input Voltage:	12vdc
Current:	1 amp for Power Amp, 250mA w/o Amp
Connection:	2 pin pluggable terminal

Manual Control Interface:

Pushbuttons:	Record, Start/Stop, Select.
LED's/Display:	Overdrive, Audio Sense, Record Status LED's, message number display.

Remote Activation I/O:

Control Inputs:	Record, Stop, 8 individual message Start contacts.
ICM-25(Option):	Add to the MacFi-mpe for 25 more start inputs per module.
Status Outputs:	Playing, Sync(MacFi-mpe version only)
Output Type:	Dry relay contact, 1A @24VDC non-inductive load
Connection:	Pluggable terminal

Mechanical:

Package:	3 Way wall mount chassis, 10" W x 8" D x 1.5" H
Material:	18 gauge cold rolled steel chassis; black painted finish, white silkscreen
Rack mount(option):	1U adapter

Regulatory Agency Approvals:

FCC, Part 15, Class A; UL/CSA approval on external power pack(sold separately)

MacFi-mpe Enhanced Features:

Serial Interface:

Type:	RS-232
Mode:	9,600 or 115,200 baud, 8 data bits, 1 stop bit, no parity, no flow control
Commands:	Play, Record, Stop, File Download, Status, etc. (See Table 4.1)
Connection:	3 pin pluggable terminal

Sync Input:

Interface:	10k ohm, RCA
Mode:	Audio sensor detects tones 100mS in duration

2. INSTALLATION & CONFIGURATION

This section provides complete instructions for mounting the MacFi-mp, MP3 Digital Audio Record / Play System on a wall or table. It also illustrates all interface requirements to auxiliary equipment, including inputs and outputs. Configuration switch settings are provided.

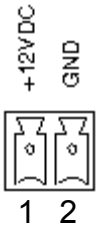
2.1 Installation Steps

These are the general steps for installation.

1. Find a space on the wall or table. For table top applications, install included rubber feet. Allow approximately 6 inches in front of, and 6 inches above the unit for user access to the controls and wiring.
2. Mount the unit to the selected place with its wiring at least 18” away from power supply or other equipment that generates electrical noise.
3. Set DIP switches to the desired operation.
4. Connect audio inputs and outputs.
5. Connect control inputs and outputs.
6. If you are using the optional power supply, make sure there is a standard, non-switched electrical outlet available.
7. Connect and apply power.
8. Test unit operation.

2.2 Hardware Configuration

2.2.1. Power

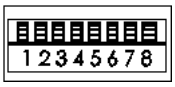


Two terminal pluggable connector.
1 12 VDC at 1 amp
2 Ground

Power LED

Green LED which indicates that power is supplied to the unit and operating correctly	Off	No power supplied to unit
	On	Power on, system OK

2.2.2. Configuration Switches



8 position DIP Switch: **UP** (▯) position is **OFF**.
DOWN (▮) position is **ON**.

This user adjustable dip switch is provided to allow the user to tailor the operation of the MacFi-mp to meet their demands**.**
NOTE: Dip switch settings are only established at system power up. To change settings, disconnect power, change the dip switch settings, then re-apply power.

Number of Plays
For applications where messages need to be repeated due to ambient noise or for clarity. Global setting for all messages. When message is activated through the remote activation connector, it will play the programmed number of times.

1	2	
▯	▯	Play activated message one times
▯	▮	Play activated message two times
▮	▯	Play activated message three times
▮	▮	Play activated message four times*

*This selection may be customized by users of the MacFi-mpe by using the PLS command for a range of 1 - 99 plays.

Pause Between Plays
When the number of plays is more than one, this configuration will insert a pause of the selected duration between each play.

3	4	
▯	▯	One second pause between plays
▯	▮	Five second pause between plays
▮	▯	Ten second pause between plays
▮	▮	Thirty second pause between plays*

*This selection may be customized by users of the MacFi-mpe by using the PAS command for a range of 0 - 99 seconds or 0 - 99 minutes.

Play Method	**5**	**6**	
Defines playback mode of Message sequences. Message sequences are comprised of the message material, number of plays and delay between plays.	▯	▯	Standard operation - details below
	▯	▮	Play one sequence per closure -details below
	▮	▯	Play while active - details below
	▮	▮	Re-trigger - details below

Standard Operation: A momentary contact closure at a start input causes the device to play one sequence of the message corresponding to that input. A sequence is specified by the number of message plays and the amount of delay between each message, as selected by the dip switches. If a contact is maintained active, the system will continuously play that sequence repeatedly until the input is released at which time the system will finish the current playback sequence and then stop.

If multiple inputs are **held active** the system will play one sequence of the first message and then cycle through any other active messages sequentially, based on the order which they were activated. The message corresponding to the lower input number will have priority should multiple inputs be activated at exactly the same time.

If a momentary contact closure is provided, for the same or any other message, while a sequence is playing and it is released prior to the ending of the current message play, it will be ignored.

Play one sequence per closure: If an activation input is maintained, the system will only play the message sequence one time. The MacFi-mp will wait for the input to go inactive for 100ms before it will recognize that input for subsequent message activations. Other play activations will be serviced normally, even with another input held active indefinitely.

This mode supports message queuing. Message queuing allows the user to input multiple, momentary activation’s to the MacFi-mp, causing each of the messages to be played in the order they were received. The queue length is 16 sequences maximum, including the message which is playing. A single

message may be queued more than once. Any activation issued once the queue is filled will be ignored.

A stop command will stop the message which is currently playing, and when released, the next message in queue will begin playing.

If multiple inputs are held active and maintained, the system will play each message sequence once then stop.

Play while active: Upon receiving a maintained input control signal, the message starts and continues to play for the duration which the control signal is held active. If the input signal is removed prior to the end of the message sequence, the system will immediately stop playing that message.

If the input is sustained after the current sequence has completed, another sequence will be initiated. If the input is removed during the delay time after the final message play in the sequence, another sequence activation will not occur.

If multiple inputs are maintained active while in this mode, the system will only play the active message of the highest priority and then repeat. This mode does not support queuing.

Re-Trigger: This mode allows playing messages to be interrupted by another incoming message, or another activation of the same message. If a message is currently playing and another message activation is received, the currently playing message will be terminated and the new message will be played.

A maintained message activation will only play the sequence one time and then stop. If multiple inputs are activated at exactly the same time, only the lower numbered message of the highest priority will be played. This mode does not support queuing.

Play Next **7**

Enabling Play Next allows Start 8 input (Connector 1, Pos. 9) to initiate playback of the next valid message sequence. The first start activation after power on will play message 1. All operation modes are supported and other start inputs (1 - 7) are disabled.

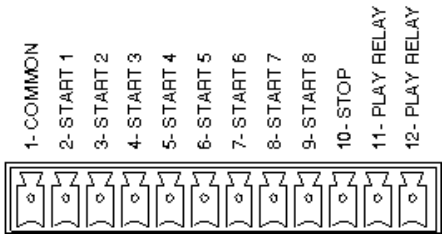
▯ Disable
▮ Enable

Memory Protect **8**

Allows the user to lock message memory so that messages may not be accidentally overwritten.

▯ Disable
▮ Enable

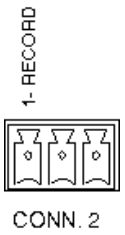
2.2.3. Connector 1



12 position pluggable terminal strip. Use for remote activation of message playback, stopping messages, and playing relay output. Activation can be made through mechanical contact or open collector driver. 3mA activation current.

1 Common ground for all inputs
2 Start 1 Input, connect to common for message 1 playback
3 Start 2 Input, connect to common for message 2 playback
4 Start 3 Input, connect to common for message 3 playback
5 Start 4 Input, connect to common for message 4 playback
6 Start 5 Input, connect to common for message 5 playback
7 Start 6 Input, connect to common for message 6 playback
8 Start 7 Input, connect to common for message 7 playback
9 Start 8 Input, connect to common for message 8 playback
10 Stop Input, connect to common to stop message playback or recording
11 Play Relay Output, Common
12 Play Relay Output, Form A, connects to position 11 when playing.

2.2.4. Connector 2



3 position terminal connection. Used for remote activation of recording.

1 Record Input, connect to common on Connector 1 to enter record setup mode.
2 Future Use
3 Future Use

For remote recording procedure, reference section 3.2.

2.2.5. Audio In Level

Potentiometer to adjust record level. +4dBm maximum input level.

2.2.6. Audio In Mic

Microphone input for recording messages. Mono. 1/8” mini jack. Up to 1.5k ohm impedance. This specification is compatible with most consumer grade microphones(Radio Shack Omnidirectional Dynamic P/N 33-2001). **NOTE: Mic input and Line input may not be used at the same time. Please make sure Line input is disconnected on the unit for the microphone to work.**

2.2.7. Audio In Line

Line level analog audio input for recording messages. Mono. RCA connection, 10kohm impedance. Compatible with the unbalanced analog outputs of most tape decks, CD players, DAT players, etc. **NOTE: Line input and Mic input may not be used at the same time.**

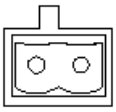
2.2.8. Audio Out Level

Potentiometer to adjust playback level. Range is continuous from -infinity to +4dBm.

2.2.9. Audio Out Line

Line level analog audio output for playing messages. Mono. Transformer isolated, RCA connection, 600 ohm impedance. Compatible with the unbalanced analog inputs of most audio equipment.

2.2.10. Audio Out SPKR



Bridged, mono speaker output for playing messages. 2 position terminal connector. 4 watts into 8 ohms or 6 watts into 4 ohms.

CAUTION: Referencing either of the speaker output terminals to ground will cause incorrect operation and may damage the unit. Always connect the speaker directly across the supplied terminal connections.

2.3 Pushbutton & LED Configuration

Pushbuttons and LED's are located on the top of the MacFi-mp allowing easy and convenient message recording and playback. The following describes use of the Status and Message Sections.

2.3.1. Overdrive Indicator

This red LED monitors the level of the recording input. Overdriving the system will cause audio to clip, adversely effecting sound quality. Monitor the input material and set the input level just below overdrive for the best results.	Off	Input is not overdriving the system
	On	Input is overdriving the system, reduce Audio In Level

2.3.2. Audio Sense Indicator

This green LED monitors the presence of audio on recording input. This is designed to indicate that the audio level is optimum for system performance. It is not an absolute reference that audio is present or not.	Off	Audio signal is low or no signal present
	On	Signal present

2.3.3. Record Indicator

This red LED			Cause
indicates that The MacFi-mp is in record	Off	System not in record setup or recording.	N/A
setup mode or recording.	Blink	Record setup mode	Record setup button
	On	Recording	Start/Stop button

2.3.4. Record Setup Button

This push button configures the MacFi-mp for record mode. Pressing this button will cause the record LED to blink, verifying the MacFi-mp is in record setup mode. Depressing this button while still in record setup mode will exit this mode and turn off the record LED. Pressing the button in the middle of the recording process will have no effect. **NOTE: If you have difficulty recording, verify Memory Protect, Configuration Switch 8 is OFF( ).**

2.3.5. Start/Stop Button

This button will either start or stop the current message. This is applicable to either record or play modes. Depressing Start/Stop button while playing or recording will exit the mode and return system to idle.

If a message is selected for playback, with its number displayed on the Message Number Display, pressing this button will initiate the message play. Pressing it again, while the message is playing, will stop the message play.

If a message is setup for recording, the record LED will be blinking and the message location will be displayed on the Message Number Display, pressing this button will initiate the recording process. Pressing it again, with the recording in process, will stop the recording.

Pressing this button with no LEDs blinking and no message on the Message Number Display will have no effect.

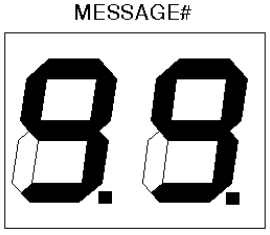
NOTE: Pressing and holding the Start/Stop button during power up will set the configuration settings to their default value. Applies to the DLY, PAS, PLY and 9,600 baud rate of the MacFi-mpe.

2.3.6. Select Button

This button selects the message for recording or playing. Depressing this button sequences through the individual message positions, represented by the Message Number and Status Display. The Select button may be used during record setup or to initiate playback mode when the system is idle.

NOTE: Holding the Select Button during message select causes the message number to increase by tens to expedite navigating through the 99 messages.

2.3.7. Message Number and Status Display



These two seven segment LED's indicate which message is selected and provide a variety of status indications for the MacFi-mp. See the table below for an explanation of the different modes of the display.

Display Reads	Cause
Cycles through all segments	No messages to select for playback.
1 - 99	Message number playing or recording
Both Decimals Blink	Message location is occupied
Right Decimal Solid	Delay, Pause or Repeat configuration has been modified on MacFi-mpe
FC	Bad Block Memory Test*
Hi	MacFi-mpe serial port set for 115200**
Lo	MacFi-mpe serial port set for 9600**

* Hold Record pushbutton during power up to start Bad Block Memory Test.

** Hold Sync pushbutton on MacFi-mpe during power up to toggle between baud rates.

NOTE: In play mode, Select button circulates through only valid recorded message locations.

3. OPERATION

3.1 Recording - Local

Local recording is achieved through the LED's and buttons located on the top of the MacFi-mp unit. Please reference the Manual Button & LED Configuration section of this manual for additional information on functions.

Step 1 – Make all desired power, audio in, audio out, configuration switch and I/O connections to the unit and power up. Unit will initiate self test and default to idle mode(approx. 2 seconds).
Step 2 – Depress Record Setup button, Record LED will blink
Step 3 – Use Select button to determine message location to record to. Message Number Display shows the selected message, both decimals blink when the location is occupied.
Step 4 – Listen to record source through the audio output and/or reference Sense and Overdrive LED's to verify level.
Step 5 – Depress Start/Stop button to begin recording and start audio source. Message and Record LED's will remain solid during recording.
Step 6 – Depress Start/Stop button to end recording and exit. **NOTE: Record Setup will time out after 1 minute of inactivity.**

3.2 Recording - Remote Control

Remote Control recording is achieved through the I/O connections located on the endplate of the MacFi-mp unit. This process is only applicable to the first eight (1 - 8) messages on the system. Please reference the Hardware Configuration section of this manual for additional information on available connections.

Step 1 – Make all desired power, audio in, audio out, configuration switch and I/O connections to the unit and power up. Unit will initiate self test and default to idle mode
Step 2 – Provide a maintained input signal between the Record Input(Connector 2 terminal 1) and common(Connector 1 terminal 1), this will blink the Record LED.

Step 3 – Provide a maintained input signal between the message activation input desired(Connector 1, terminals 2-9) and common(Connector 1 terminal 1). Both the Record and corresponding message on the Message Number Display will remain solid during recording
Step 4 – Start audio source.
Step 5 – Release message activation input to stop recording.
Step 6 – Release recording input to exit record mode.

3.3 Playing-Local

Local playback is achieved through the LED's and buttons located on the top of the MacFi-mp unit. Please reference the Manual Button & LED Configuration section of this manual for additional information on functions.

Step 1 – Make all desired power, audio out, configuration switch and I/O connections to the unit and power up. Unit will initiate self test and default to idle mode.
Step 2 – Use Select button to determine message location to play. Select button will only increment between valid message locations, showing them on the Message Number Display. System will scan/blink through all segments on the Message Number Display and exit if no valid messages exist when Select button is depressed.
Step 3 – Depress Start/Stop button to begin playback. Message LED will remain solid during playback.
Step 4 – Depress Start/Stop button to end playback and return to idle.

Playback message selection will time out after 1 minute of inactivity. Default message is the first location with a valid recording.

3.4 Playing-Remote Control

Remote Control playback is achieved through the I/O connections located on the endplate of the MacFi-mp unit. This process is only applicable to the first eight (1 - 8) messages on the system. Please reference the Hardware Configuration section of this manual for additional information on available connections. Playback of message will include selected repeat and delay parameters.

Step 1 – Make all desired power, audio out, configuration switch and I/O connections to the unit and power up. Unit will initiate self test and default to idle mode.

Step 2 – Provide a momentary or maintained contact closure between the message input(Connector 1, terminals 2-9) desired and common(Connector 1, terminal 1). Message Number Display will show the message number during playback.

Step 3 – Provide a momentary contact closure to the stop input(Connector 1, terminal 10) to stop playback and return to idle mode - or - allow message to play to end at which point, system will return to idle mode.

MacFi-mp will ignore an input which corresponds to an empty or corrupt message location. Play relay contact will be maintained for the duration of play sequence. When playing multiple messages through queued messages or via maintained start activation's, the system will drop the play relay for approximately 100mS between sequences.

3.5 Memory Clear/Test

Use this procedure when you wish to clear system memory of previously recorded messages or test/verify system memory for bad blocks.

Step 1 – Remove power from MacFi-mp

Step 2 – Depress and hold Record Setup button while restoring power to MacFi-mp. Continue to hold Record Setup button until Record Indicator remains ON, at which time it may be released. Record Indicator will remain ON and Status Display will read FC while system runs audio memory check. This process could take up to 20 minutes on the MacFi-mp 40

Step 3 – Wait until Record Indicator turns off, indicating memory check is complete, and unit will perform as usual.
-or-
Remove then re-apply power to bypass memory test.

3.6 Erase Message

Individual message locations may be erased by simply recording a message to that location with less than 1 second in duration. This short recording will instruct the system to erase the data from that message location.

4. MacFi-mpe ENHANCED FEATURES

The purpose of this section is to document and explain the added features of the MacFi-mpe. In brief, these features include RS-232 (Serial) control and Synchronization Relay. These features also change some physical attributes of the original MacFi unit. These physical changes include, a 3 position Euro style connector for serial communications, an RCA type input for automated sync track encoding, a sync pushbutton for manual sync track encoding. The sync track relay populates positions 2 and 3 of Connector 2, which were previously unused.

For more details on use of the Enhanced Features of the MacFi-mpe please obtain the User's Manual for this product, Doc 99-20-044.

4.1 RS-232 (Serial) Command List

CMD	Options	Description
BAS	[<0,+/-12>]	Set Message Bass Level.
BBT		*Memory Bad Blocks Test.
CFG		*Restore Default Configs.
DIR		Directory of Message Priority.
DEL	[<1-99>]	*Delete Message.
DLD	[<1-99>]	Download MPG Message.
DLY	[<0,+/-99>] (+=sec, -=min)	Delay Before 1st Play Start.
LST		This Commands Listing.
PAS	[<0,+/-99>] (+=sec, -=min)	Pause Between Play Repeats.
PLS	[<1-99>]	Number of Plays per Trigger.
PLY	[<1-99>,<1-99>,<0,+/-99>]	Play Message,Repeat,Delay.
PRI	[<1-99>,<E>nable/<D>isable]	Set Priority Message,Enable.
REC	[<1-99>,<1-99>,<0,+/-99>]	Record Message,Delay,Time.
RST		Warm Reset System
SHP		*Init Configs & Erase Messages.
STP		Stop Message Playback.
STS	[<0>Off/<1>On]	Display Play Status Messages.
SYS		Display System Information.
TRE	[<0,+/-12>]	Set Message Treble Level.
ULD	[<1-99>]	Upload MPG Message.

* = Confirmation Required

5. WARRANTY, SERVICE & RETURNS

The industrial grade housing and quality construction of the Mackenzie MacFi-mp virtually eliminates the need for service or maintenance. There are no user-serviceable components within the Mackenzie MacFi-mp. Refer all servicing to the factory.

5.1 Warranty Coverage:

The Mackenzie MacFi-mp is tested and checked before shipment and is guaranteed against defective material or workmanship for a period of one (1) year from the date of purchase. Should trouble ever develop, contact the Factory directly by telephone or in writing. If it is determined that the equipment requires Factory service, return it to the Factory. If our inspection shows that the trouble was caused by defective material or workmanship, we will repair or replace the equipment without charge and return prepaid. Repairs made necessary by abuse, improper use, unauthorized service or maintenance, and/or improper installation, as well as out of warranty repairs, will be charged at our regular repair prices in effect at the time. The obligation under this warranty shall be limited to the replacement, repair or refund of any such defective device within the warranty period, at Mackenzie's discretion.

This warranty is in lieu of and excludes all other warranties, expressed or implied, and in no event shall MACKENZIE be responsible for damage to other equipment or property, for any anticipated profits, consequential damages, loss of item, or other operation or use of this product, and MACKENZIE'S maximum liability shall not ever be greater than the price paid for the equipment. This warranty gives you specific legal rights. Your rights may vary from state to state. Inquiries regarding use, repair and service should be made to:

MACKENZIE LABORATORIES, INC.
1163 Nicole Court, Glendora, CA 91740 USA
Telephone: (909) 394-9007 / FAX No: (909) 394-9411

5.2 What we ask you to do:

To get warranty service for your MacFi-mp system, you must provide proof of the date of original purchase. In the event you need to ship your MacFi-mp system to the factory for service, call us for a return authorization number. When you ship your MacFi-mp system, you must prepay all shipping cost. We suggest that you retain your original packing material in the event that you need to ship your MacFi-mp system. When sending your MacFi-mp system to the factory, include your name, address, phone number, proof of date of purchase, and a description of the operating problem. After repairing or replacing your MacFi-mp system, we will ship it to your return address at no cost to you within the USA. Repair or replacement of your MacFi-mp system at our factory is your exclusive remedy.

5.3 What this warranty does not cover:

This warranty does not cover defects resulting from accidents, damage while in transit to factory, alterations, unauthorized repairs, failure to follow instructions, misuse, fire, flood and acts of God.

NOTES:

Warranty & Registration Card for the MacFi-mp - MP3 Digital Audio Record/Play System

Date: _____ Serial No.: _____
Purchaser: _____
Address: _____
City: _____ State:_____ Zip:_____
Phone: _____ Fax:_____ Email:_____
Purchased From: _____ Date:_____
Address:_____
City:_____ State:_____ Zip:_____
Phone: _____ Fax:_____ Email:_____

Return warranty card to Mackenzie Laboratories Inc., 1163 Nicole Court, Glendora, CA 91740 USA
- or -
Email information to registration@macklabs.com

_____
_____
_____
Return Address

MACKENZIE LABORATORIES, INC.
1163 Nicole Court
Glendora, CA 91740 USA

OTHER MACKENZIE PRODUCT LINES

Message On Hold & Storecasting - Mackenzie's full line of digital Message-On-Hold systems, turn your telephone into a powerful marketing tool. The DYNAVOX series offers maintenance free digital playback with tape, modem or satellite download. Several varieties are available with advanced features such as Music-Thru, individual message enable/disable, message sequencing and more.

Digital Message Repeaters - Mackenzie's line of Digital Message repeaters are the ideal audio and video solutions for Information, Amusement, Entertainment, Museum and Exhibit applications. Self contained solid state systems offer unparalleled reliability. A variety of channel, connection, bandwidth and memory configurations are available.

Page Stacker / Feedback Eliminator - Mackenzie's FE series of Digital Page Stacker/Repeater and Feedback Eliminators offer advanced features for the most difficult paging and intercom applications. A unique design makes feedback virtually impossible by recording then repeating pages which opens the loop between the input microphone and speakers. Various models are available to support simple repetition, multiple page stacking and multiple input channels.

Transit - Mackenzie is making a difference in transit applications with innovative solutions for ADA compliance and Passenger Information Systems. These products address a variety of audio and text messaging requirements and support both in-vehicle and wayside installations.